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|-------------------------------|------------------------|---------------------|---|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/689,453 | KROL ET AL. | |
| | Examiner | Art Unit | |
| | Tuyen Q Tra | 2873 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/20/2003.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☒ The drawings filed on 20 October 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date <u>0704</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>1004</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Kevin Able on July 16, 2004.
3. The application's claims have been amended as follows:
 - Claim 9, line 9, "skew angle (\square)" has been amended as --skew angle (δ)--.
 - Claim 22, line 4, "skew angle (\square)" has been amended as --skew angle (δ)--.
 - Claim 9, line 14, " Λ is the grating period" has been added to the end of line 14.
 - Claim 22, line 9, " Λ is the grating period" has been added to the end of line 9.

Reason For Allowance

4. Claims 1-24 are allowed.
5. Following is an examiner's statement of reasons for allowance:

The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims 1, 9, 14 and 22, which include (claim 1) a detector for receiving a reflected light beam from the grating-based waveguide sensor that was tuned to have a resonance at a predetermined special location by adjusting a skew angle defined as an angle

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between a plane of incidence of the light beam directed into the grating-based waveguide sensor and a grating vector which is perpendicular to lines of a diffraction grating within the grating-based waveguide sensor; (claim 9 and 22) grating-based waveguide sensors was tuned to have a resonance at a desired spectral location by adjusting a skew angle (δ) defined by the equation: $\sin\theta\cos\delta = n_{\text{eff}} - \lambda/\Lambda$, where θ is an angle of incidence of the respective light beam, n_{eff} is the index of refraction of the grating-based waveguide sensors, λ is the wavelength of the respective light beam, Λ is the grating period; (claim 14) wherein each grating-based waveguide sensor was tuned to have a resonance at a predetermined spectral position by adjusting a skew angle defined as an angle between a plane of incidence of the light beam directed into that grating-based waveguide sensor and a grating vector which is perpendicular to lines of a diffraction grating within that grating-based waveguide sensor.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Tsay et al.(US 5,089,387A) discloses a DNA probe diffraction assay and reagents comprising of a light source (20), a sensor (28) and detector (38). However, Tsay et al. does not teach or suggest a detector for receiving a reflected light beam from the grating-based waveguide sensor that was tuned to have a resonance at a predetermined special location by adjusting a

skew angle defined as an angle between a plane of incidence of the light beam directed into the grating-based waveguide sensor and a grating vector which is perpendicular to lines of a diffraction rating within the grating-based waveguide sensor.

b) Mitchell et al. (US 5,809,185 A) discloses a Sensor for detecting microorganisms in Figure 1 comprising of a light source (16); a waveguide sensor (18, 20) and a detector (22). However, Mitchell et al. does not teach or suggest a grating-base waveguide sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (571) 272-2343. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (571) 272 - 2328. The fax number for this Group is (703) 872-9306.

tt

July 16, 2004



Hung Xuan Dang
Primary Examiner